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Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

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KOPPERS OVENS

ARE THE

STANDARD BY-PRODUCT COKE OVEN OF THE WORLD

825 Ovens

NOW BUILDING

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More than 50% of the By-Product Coke now produced in the United States is

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The most efficient Gas Plants in the world are

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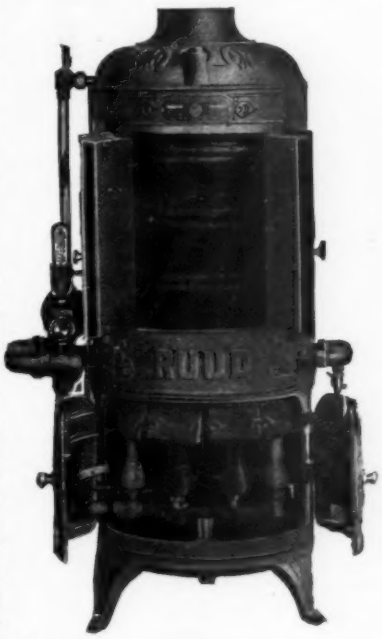
THE GAS WATER HEATER.

"To the present cry for a means to effect an increase in the per-capita consumption, the water heater is the one great answer. True, small appliances can always be sold, but their consumption is trifling. New appliances, such as garbage incinerators, are appearing almost daily, but they must, of necessity, pass through a stage of missionary work for which we have not time to-day. They are future, not present, helps in time of trouble. The public has been prepared for water heater activity by copious advertising by the manufacturers of coal and gas water heaters, and in some situations also by the gas company. Another driving force of public opinion is the increase in appreciation of the value of cleanliness as an aid to sanitation. Few magazines and newspapers but have published stories along this line. Coupling these facts with the fact that the coal range is dying fast, there is little cause for doubting that a better time could not be found, psychologically if not commercially, for pushing water heaters."

WHAT SOME MAKERS OF WATER HEATERS ARE OFFERING THE GAS COMPANY.

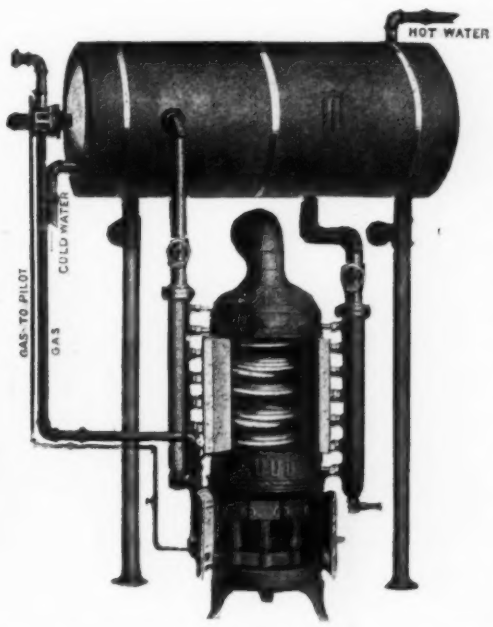
The oldest organization continuously in the water heater business is the Ruud Manufacturing Company, Pittsburgh, Pa., and to many people "Automatic Water Heater" spells "Ruud." Building water heaters is a manufacturing science of its own. To succeed, correct principles in the construction and wide-awake management and engineering skill must be properly combined to serve the ends you seek to attain. This organization has behind it the genius and skill of the best engineers developed in the water heater industry. The Ruud is not an assembled machine. It is made completely in one plant, where you will find refinement of detail of fundamental operation that is only possible in an institution that has had the services of the best engineers and workmen trained as specialists in individual operations.



The important operating parts are finished with the same precision as in the watch-making industry. Diamond pointed tools are employed. The brass work is made complete in the plant and at all times from new metal, no scrap entering into a brass single part.

Superior construction, and the use of the best materials obtainable, fabricated into a water heater that has been a standard for nearly twenty years, guarantee the longest operation with the least attention or repairs. There is practically nothing to wear out. Experience has anticipated every weakness, and each part has been tested under every conceivable condition, and time is the only factor that will prove the correct or incorrect use of any detail or fundamental for all construction.

The Ruud Multi-Copper Coil Automatic Storage System is designed to supply the demand, where hot water is required in large quantities, in apartment houses, small hotels, office buildings, hospitals, schools, bath houses, gymnasiums, restaurants, factories and large residences, in fact wherever a number of faucets are likely to be in use at one time.



When it is put in operation it burns gas until the tank full of water is heated to its predetermined temperature. Then the gas shuts off automatically and remains off until by reason of withdrawal, the temperature of the water in the tank is reduced about 20°, when the gas is automatically turned on long enough to bring the water up to its original temperature. It is especially adapted to tank or low water pressure conditions, due to the fact that there is no resistance to the flow of the water, and the hot water can be had at any point where the cold water will flow, and with the same rapidity.

It is also especially adapted for apartment houses having a large hot water tank, heated by steam coils, or other heating devices operated in winter but not feasible in the summer. As an auxiliary

under such conditions, the Ruud heater with the thermostatic moment valve is an ideal system, supplementing the other when called upon, furnishing large quantities of clean hot water, working automatically, requiring no attention and without heating up the building.

High instantaneous heating efficiency is obtained by the use of the "Manifold System" of independent, detachable copper heating coils, because practically every particle of heat generated by the burners is utilized to produce hot water—there being absolutely no waste that can possibly be eliminated, Every coil is constructed in accordance with the well-known Ruud principle—that of a "cone" or "staggered" shape, and are white enameled inside, thereby aiding the circulation of the water and eliminating any possibility of restriction or corrosion.

This system is guaranteed at 65% heating efficiency, the largest guaranteed efficiency ever given on an automatic gas storage system.

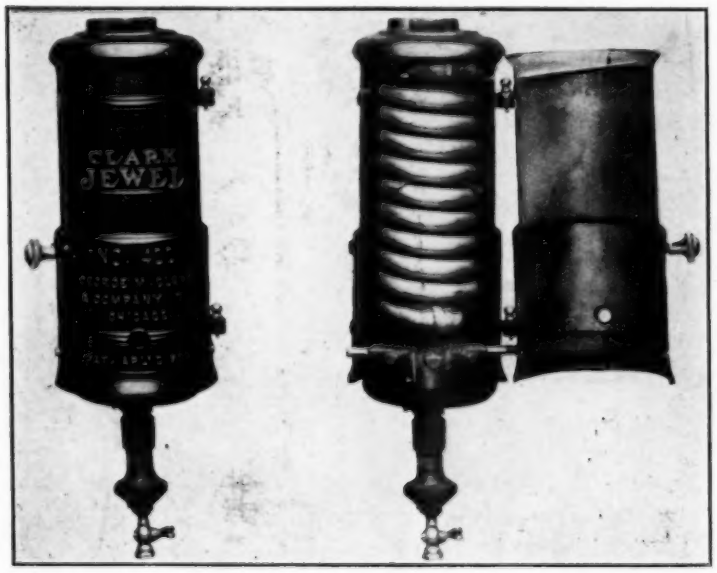
An elaboration of this design is the Ruud Straight Gas House Heater, which gives with room temperature regulators perfect and uniform regulation of the house temperature, irrespective of outside conditions. The thermostat in the manifold of the heater governs the temperature of the circulating hot water, and the room temperature regulator controls the supply of fuel to the heater, in strict accordance with predetermined temperature, which may be quickly and simply adjusted. From the point of service and convenience, the Ruud Automatic House Heater has resolved the question of home heating absolutely, eliminating every factor of personal attention.

In response to the demands for a high-grade storage system of moderate capacity, the No. 50 meets many conditions of residence use and other special purposes which for various reasons are not satisfactorily met by the Instantaneous Automatic Heater and do not require the larger Ruud Automatic Multi-Coil Storage System.

The No. 50 is invaluable for jobs depending upon tank water supply, or where an old gas service exists and it is not possible to enlarge this sufficiently to operate an Instantaneous Automatic Heater. The fuel supply is controlled by a Ruud Moment Valve, whereby chimney losses are entirely eliminated. When the tank is brought to the desired temperature the valve closes off and remains closed entirely until the water temperature has fallen at least 20°, when the valve opens full and the heater operates until the water has again reached the temperature for which the valve was set. The heater has a triple coil construction, exposing a large area of heating surface. The coils are manifolded into one header, having union connections, eliminating all brazed joints. The heater shell is heavy cast iron, with sheet metal lining, providing a dead-air insulation.

The Ruud meets all requirements, large or small, and is manufactured in numerous types and styles, and at varying prices, but all of the same quality, differing only in capacity, and is the only heater fitted with internal thermostat, guaranteeing positive control under all conditions.

The Clark Jewel No. 400 is the latest water heater design of George M. Clark & Company.



Its prominent features are:

A brass casting brazed on bottom of coil receives the concentrated heat at the center of the burner.

One-inch copper tubing, allowing easy flow of water and slow to fill up when used with hard water.

High efficiency powerful burner with condensation cup below.

Double jacket with air space where heat is greatest: cast iron outside, and heavy steel inside.

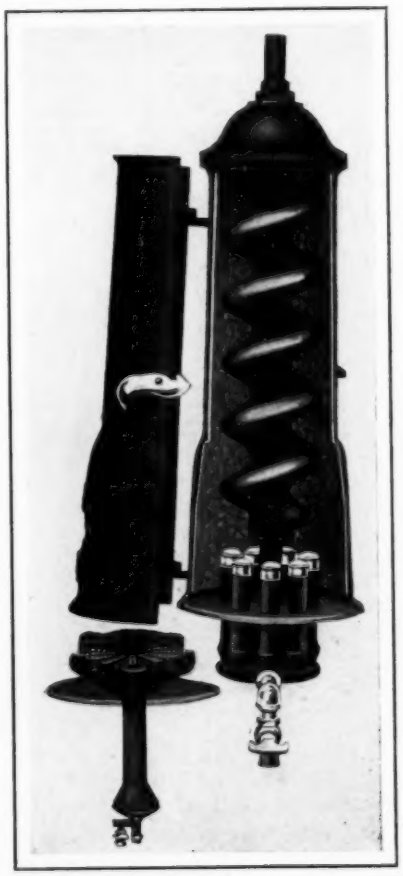
Steel diaphragm at center of coil and ribs cast on casing to guide the flow of gases have much to do with the heater's efficiency.

The brass casting at the bottom of the coil is directly over the hot central part of the flame, and the copper tubing gets the full effect of the powerful burner. By this arrangement a great deal of heat that would otherwise escape is transferred to the water.

The actual test of this heater, run at the same time with the best double-coil heaters on the market, shows from 5 to 10% greater efficiency.

The Estate Stove Company, Hamilton, Ohio, while making a double coil water heater equipped for their patented "Longard" type burner, continue to make and sell in large quantities the well known Estate Rotary Water Heater, its distinctive feature being the one-piece worm-shaped water chamber, made either of cast brass or cast iron.

The water chamber in this heater is cast in one piece, and is worm or screw shaped, as the name indicates. This construction insures the exposure of the greatest possible surface to the direct action of the heat; eliminates all angles or pockets which might collect sediment; and affords an unobstructed course for the water.



The new burner for this appliance shows very high efficiency. It is of the bunsen type, shaped to project the flame in a semi-circle around the base of the water chamber. Its peculiar shape permits the maintenance of the highest possible velocity of the gas at the nozzle, and unretarded conduct to the point of combustion, assuring a powerful flame and efficient combustion without danger of firing back.

The cast iron jacket fits snugly around the water chamber so as to compel the products of combustion to follow the deep spiral threads of the water chamber in their travel upward to the flue. In this way the entire surface of the water chamber (approximately two square feet) is directly exposed to the products of combustion, absorbing the maximum amount of heat for communication to the water that courses through the chamber.

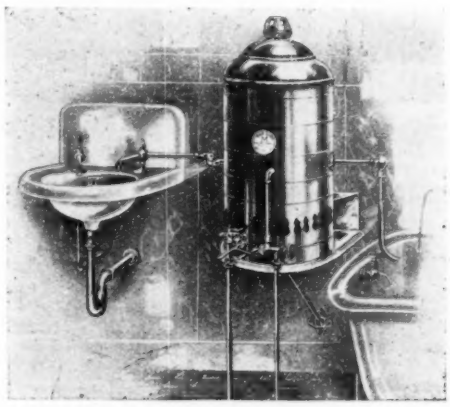
The jacket is made in two equal sections, the front half forming the door, which must be opened to light the burner.

The illustration shows two types of burners, a drilled star burner and one of individual bunsens with gauge caps.

The Dayton Manufacturing Company, of Dayton, Ohio, who recently purchased the "Ohio-M" Instantaneous Water Heater from the McCormick Manufacturing Company, has been in the manufacturing business for nearly 40 years, making switch and car locks, lamps, locomotive headlights, searchlights and a complete line of metal furnishings for railway street cars, and steam ships.

The plant is fully equipped with the most modern machinery and every facility for manufacturing heaters, as prior to purchasing the "Ohio-M" Water Heater business, the Dayton Mfg. Co. had been manufacturing and shipping the heater for the McCormick Mfg. Co.

The scientific construction of the heater prevents injurious products of combustion and, therefore, eliminates the dangerous vent pipe, and down draft troubles. The heater can be installed in any place where there is gas and water, because there is no flue pipe or condensation attachment required.



Mr. R J. Hutchine, the inventor of the "Ohio M" Heater, has charge as manager of the Heater Department. Mr. Hutchine has made the gas business a life study. For five years prior to specializing on gas appliances he was actively engaged in the manufacture and distribution of gas, and for the past fourteen years he has been manufacturing and selling instantaneous water heaters. The need for a non-vent pipe instantaneous bath water heater presented itself to him while he was engaged in the gas business. Many of his consumers wanted instantaneous heaters, but could not have them, simply because their bath rooms were so located that there was no possible egress for a vent pipe. Then in other instances, a vent pipe connection would have to be made over tortuous routes, involving a heavy added cost to the installation, and after all this expense and trouble had been undergone, the real expense and trouble commenced, caused by the inevitable and unavoidable down draft.

To invent an odorless, non-vent pipe instantaneous water heater became an obsession with him, and for several years he gave the matter incessant thought and spent much money in experiments. The result of this long research is the "Ohio-M" Instantaneous Water Heater. Mr. Hutchine brought this appliance to the attention of the McCormick Mfg. Co, who were at that time successfully manufacturing and marketing a vent pipe heater. After making exhaustive tests of this heater and finding it made good every feature claimed, they closed with him for the manufacturing right. Mr. Hutchine became associated with the McCormick Mfg. Co. and was of material assistance in developing the sale of this heater to its present attractive proportions.

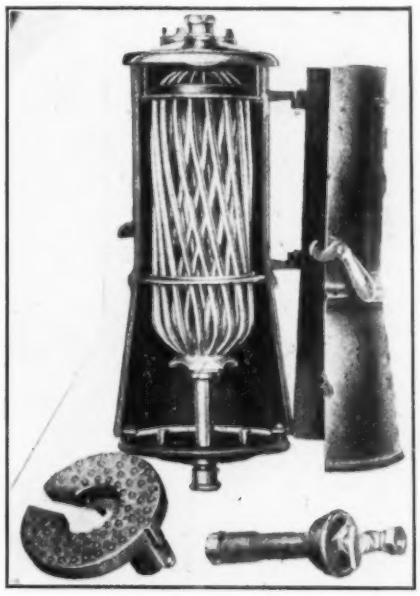
The Stack Water Heater Company, Boston, Mass., make the only gas water heater using a plurality of vertical water pipes.

The Stack Water Heater is built on scientifically correct principles for heating and moving forward heated water. Small seamless heavy gauge copper pipes surround small units of water—these pipes swedged into bronze heads forming boiler and water tight joints, and the heads fused into a solid mass with a special metal produce a non-leakable connection.

The pipes are so placed that the entire heating surface is exposed to the fire directly, a condition not existing in any other type of heater.

The burner is of approved one-piece pattern, and specially designed to concentrate the heat to carry the largest possible percentage of heat units into the water.

Heated water naturally rises directly upward—not sideways and then up, but straight up. In the vertical pipes of the Stack water heater the instant the water begins to receive the heat it takes its natural flow upward. Because of the small columns of water surrounded by proportionally large heating surfaces, the reception of the heat by the water is almost instantaneous and with the unusually large percentage of the heat absorbed by the water the rapidity of action is accounted for.

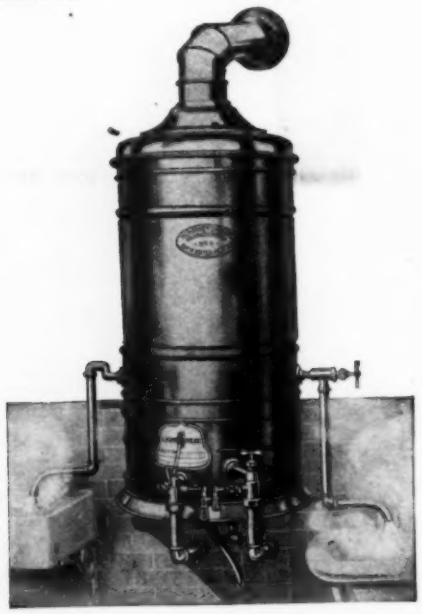


The Stack water heater has been on the market locally for ten years, and by the experience of thousands of users and through knowledge gained from numerous gas companies who have sold the heater, has shown less deterioration in material and in heating qualities than any other heater on the market. There is no point in the heater where sediment can lodge, which if lodged would form a blanket between the heat and the water. The rapidly moving heated water prevents the possibility of any stoppage. The heater is made in three sizes, for boilers of from 30 to 60 gallon capacity; and in the multiple storage system one to six heaters with thermostatic control are connected to a storage tank of size to meet the particular requirements.

The Jiffy Water Heater, made in St. Louis, Mo., is about as simple in construction as possible. It consists of a sheet iron jacket enclosing a cylindrical cast iron direct water passage, which has solid heat absorbing flanges or fins on its outside surface. The burner is a pipe bunsen, and the products of combustion are baffled

transversely and low longitudinally. This heater can be set either vertically or horizontally, and is guaranteed "to consume not over 40 cubic feet of artificial gas (36/10) per hour and will increase the temperature of the water in a 30-gallon tank 79½° F. per hour."

The Humphrey Company, Kalamazoo, Mich., have a gas water heater for every conceivable use. Their Instantaneous Bath Water Heater gives hot water cheaper, quicker, more surely and with less trouble than any other; and is one of the best known gas appliance on the market.



The latest addition to this line is the Humphrey Shower Bath Water Heater, a practical and efficient shower bath heater for the home that wants the convenience of a shower bath without the expense of elaborate equipment.

A cold shower bath can be had by turning on the water without lighting the gas. It heats water the instant the gas is lighted, and in 7 seconds you can be under a delightful hot shower. The cheapest and quickest way in the world to get a real hot shower bath.

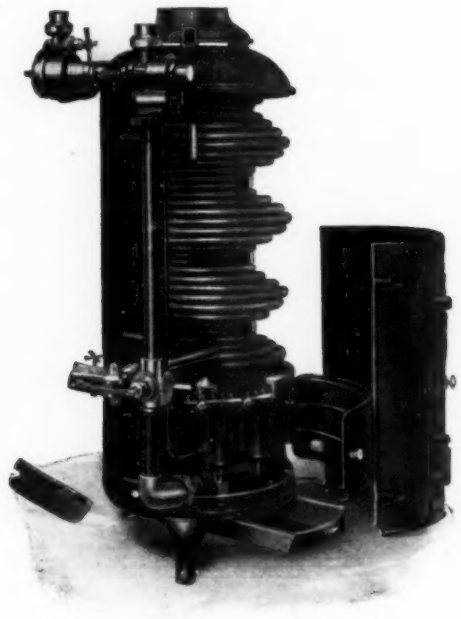
The heater costs very little. No other is so cheap or easy to operate. Gas burns only when the hot water runs. Simple, durable, handsome in appearance—an ornament to any bathroom. Made entirely of brass and copper nickel-plated and highly polished. Interlocking valves prevent fire in heater without water.

The type "A" automatic supplies unlimited hot water all over the house, always ready at the turn of a faucet.

The following is a detailed description: The outer casing, or shell, is best gray iron castings, finished with two coats of black japan, baked on, and with gold bronze decorations. A double wall with dead air space between reduces heat losses. Double spring doors, both front and rear, allow easy access to interior for coil inspection. All jacket bolts are brass or have brass nuts.

To neutralize excessive chimney drafts that would hinder combustion and increase fuel costs, the heater is equipped with a patented cast-iron, noncollapsible draft-hood that cannot be made inoperative by a careless fitter when connecting the flue pipe.

The copper coils consist of a series of spirally wound tubes shaped over steel forms by the the Humphrey patented process which has several advantages—it eliminates filling with sand or rosin (the original crude method), insures accurate spacing between winds, a proper exposure of heating surface, and the highest practical working efficiency. Tested, after coiling, to 800 pounds pressure. Should wear occur in coils, it would be in the lower section, because that does the hardest work. This lower section is attached by unions to provide ready and comparatively cheap replacement, if ever required.



The Automatic Water Valve, producing the power that operates the automatic mechanicism, is self-cleaning in its action, has a patented two-piece piston, with two-point suspension, which insures absolutely true travel and prevents tilting and sticking. This piston, as a positive protective feature, is second only to the Humphrey internal thermostat.

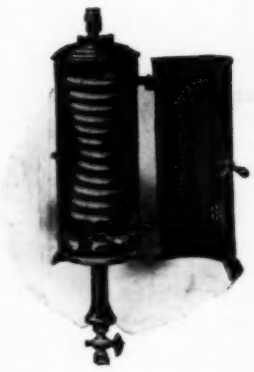
The Safety Temperature Control is inside, between the burner and the heating coils—the only location that makes control positive under all conditions. The gas valve through which this control operates, is separate and distinct from those operated by water pressure. It is the only thermostat that, if the automatic gas valve is held open for any reason, will positively shut off the gas and prevent burning out of coils.

This heater is made in from 2-gallon per minute capacity to 8 gallons.

The No. 20 and No. 30 Automatic Water Heaters are a lower priced sturdy heater, without thermostatic control; the smaller Aluminum Cottage Water Heater is made on similar lines; and a copper coil circulating tank heater completes the line.

The Lawson Manufacturing Company, Pittsburgh, Pa., make a complete line of gas water heaters including cast iron sectional heaters, single, double and triple coil heaters, and a combined boiler-heater.

Their No. 5-8 single coil is construction of the most durable type. Cast iron jacket and top, black japan finish. Copper coil with heavy brass couplings. Cast iron deflectors. Specially constructed, high power star burner. Heavy brass tee-handle cock.



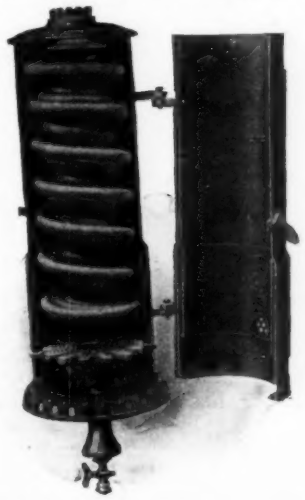
This heater, having cast iron jacket, is an improvement over the standard type with steel jacket, having far greater durability.

Hinged door—half of jacket—permits easy cleaning. Drip pan catches condensation and is a receptacle for match sticks.

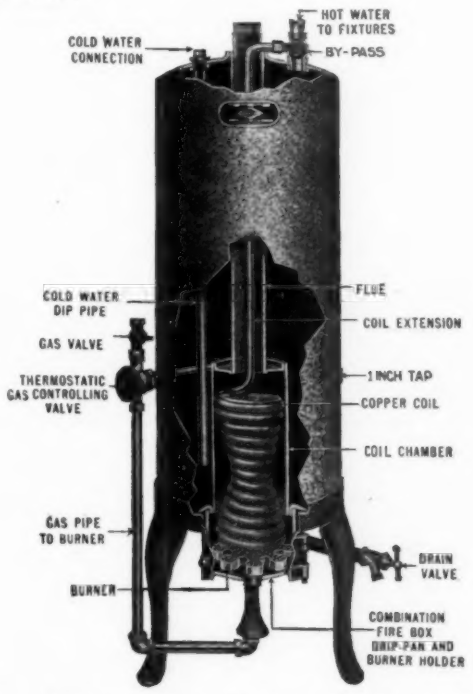
No. 5 or 6 is usually used for a 24, 30 or 32-gallon range boiler, No. 7 for a 35 or 40-gallon, No. 8 for a 50 or 60-gallon.

The No. 24 Triple Coil Heater has three copper coils brazed to heavy brass manifolds, tapped for 1-inch pipe connections, coils held rigidly and securely in position by lock nuts, and extra high

power star burner, with capacity of 60 to 90 feet of gas per hour. This heater is built for service where a large quantity of water is required and is adapted for large dwellings, apartments, etc.



Hinged door—half of jacket—permits easy cleaning. Drip pan is cast with base in one piece. Ordinarily connected to a 50 or 60-gallon range boiler.



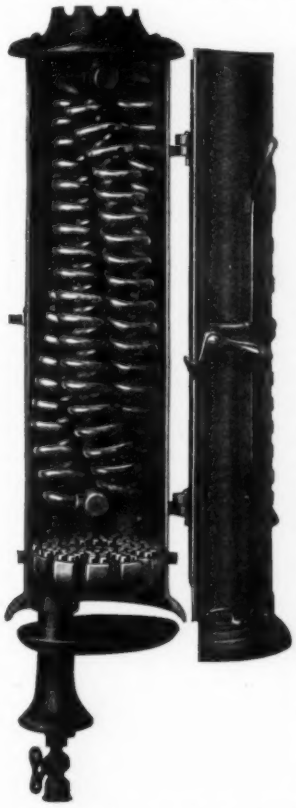
The Lawson Combined Boiler Heater combines range boiler and gas heater in one complete construction. It is a plumbing fixture thoroughly mechanical in design and absolutely reliable in construction. It is complete, ready for installation when shipped from the factory and requires no assembling or adjusting of parts. With connection being made to gas and water lines the heater is ready for immediate use.

A copper tube coil of considerable length forms the direct heating surface and heats by circulation, having connection at top and bottom of boiler. The copper tube permits instant absorption of the heat by the water and in its passage through the coils and upwards in the riser, which is a continuation of the tube, all the while being surrounded by the hot gases, it enters top of boiler highly heated. The coil chamber and flue afford considerable additional heating surface, and impart to the water a large percentage of the heat. In the independent heater all this heat is lost by radiation and direct escape from flue. It will readily be seen from sectional cut, how, in the Lawson Combined Boiler Heater the heat is wholly conserved.

The thermo-valve automatically regulates the gas. It may be set for any predetermined temperature within the scope of domestic hot water requirements and it prevents overheating, and insures constant hot water by allowing a full flow of gas as long as the temperature of the boiler is below the point desired.

This heater is made in sizes, from 12 to 40-gallon capacity and meets all demands of domestic hot water requirements.

The Matchless Heater Company, Holyoke, Mass., call their Holyoke water heater the "Heart of the Household." It contains four heavy copper coils and is so constructed that the hot gases strike the coils many times before going out the vent pipe. It will produce hot water quicker than any other heater made and is almost instantaneous, but is much more economical than the instaneous type.



The coils can be cleaned easily by opening the door and using a stiff brush.

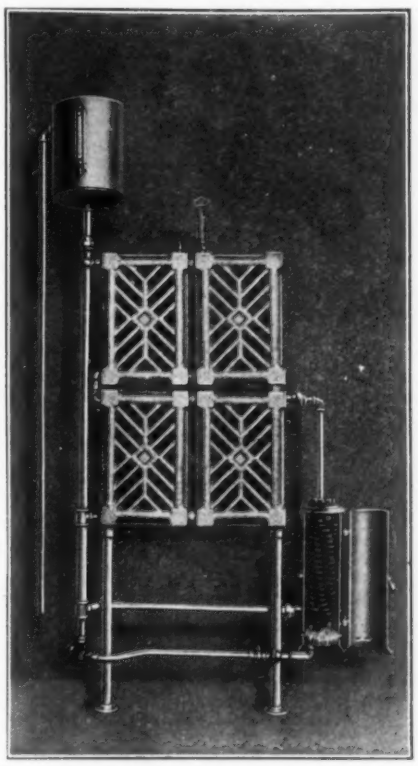
The shell is of heavy iron, and made in four parts—top, front door, back half and burner. These parts are easily and quickly assembled and are interchangeable.

When this company decided to manufacture a water heater they bought one of each of the best types on the market, and after testing out all of them, settled down to work out their own ideas of what a water heater should be.

The name, "The Holyoke," was chosen as the entire heater, with the exception of the tubing, is made there. When an article is good enough to be named after its home city, you can depend upon it to be the best that brains and money can produce.

This heater contains four copper coils, each 8 feet long, making 32 feet in all.

Notice that the one-quarter turn of the coils baffles the flame, and thus utilizes a large percentage of the heat. This turn of the coils also prevents backdrafts.

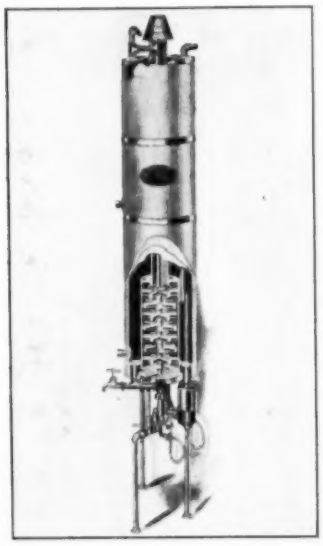


They lay great stress on the Holyoke's adaptability to house heating, one such unit being shown in the cut. One heater will heat a good sized garage or bungalow, using radiators of any type, or a number of pipes run around the room, and they can be placed in series of two, three or four heaters according to the space to be heated, and can be controlled by a thermostat.

The heater is made to work with steam or hot water systems as desired.

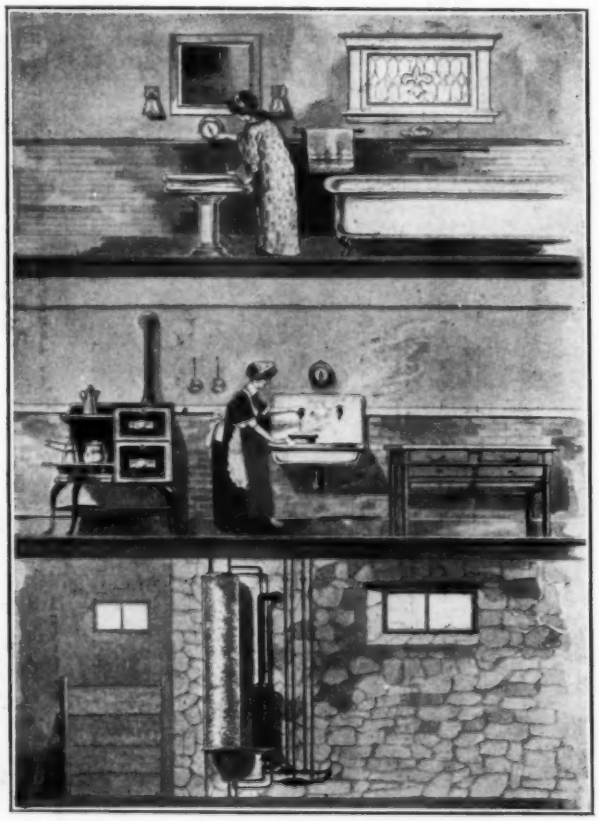
This company also makes a self lighting instantaneous water heater designed for bath room use.

The Gas Appliance Corporation's "Electric Weld" Combination Boiler and Gas Water Heater, automatic and non-automatic, combines in one fixture a range boiler and gas water heater. It consists of an extra heavy, electrically welded boiler shell, heavily galvanized; with a highly efficient gas water heater built into the center of the boiler. By so locating the heater several advantages are secured. First, the boiler and heater are very compact, the whole apparatus requiring only the same floor space as the ordinary range boiler; second, the appearance of the boiler and heater is vastly better; and third, the efficiency of the heater is increased.



The increase in efficiency is due to the fact that the heater is surrounded by the water in the boiler, so that the water absorbs that portion of the heat which in other types of gas water heater is lost by radiation from the jacket and from the flue, the latter running up through the center of the boiler, so that the flue gases travel the entire height of the boiler before escaping.

All parts are interchangeable and the heater is assembled with standard I. P. S. connections, so that any necessary repairs may be made at a minimum expense, and heaters are furnished in sizes to meet all requirements, from the small apartment to the large hotels.



The "Electric Weld" Combination Boiler may be had in either the automatic or non-automatic type. The automatic type is equipped with a quick acting thermovalve, and with an asbestos cover, by these means maintaining at all times a boiler full of hot water. The asbestos cover prevents loss of heat by radiation and the pilot light, consuming approximately $1\frac{1}{4}$ feet per hour, will maintain the temperature of the water against radiation, so that the main burner positively will not come on except when the water is drawn. This automatic combination boiler is guaranteed to provide automatic hot water service equal to that furnished by the highest priced appliances offered for this service, and is the most highly efficient type of automatic gas water heater obtainable.

The low price at which it can be sold does not represent any sacrifice in quality or efficiency, but is due to the radical difference in design, which permits of a lower manufacturing cost. There is a very obvious advantage to the gas companies in handling a low-priced automatic gas water heater of high efficiency and guaranteed construction.

The gas supply to the burner is $\frac{1}{2}''$, requiring no extra large gas lines or special meters. This makes every consumer an automotic gas water heater prospect and furnishes the means by which the building operator can be induced to install the all gas kitchen under conditions where this has heretofore been regarded as impossible. In the past two years the "Electric Weld" automatic combination boiler has been installed in operations building houses selling for $3,800 and $3,900; a record for automatic gas water heaters equipment.

There is a pronounced increase in the use of a circulating heater with a range boiler in the cellar connected to a furnace coil. This makes it necessary for the housewife to make two trips to the cellar; first to light the heater and later to turn it off. A satisfactory form of distant lighting has long been sought, and success has been achieved by the Gas Appliance Corporation in the modern Automatic Control Distant Lighter and Timer; a device that provides the means of lighting the heater from the kitchen or bath room, and extinguishes the heater automatically at the end of any predetermined time.

With this attachment the water heater may be located in the cellar, laundry, kitchen, or elsewhere, and the timers located at any desired point in the house, preferably in the kitchen and bathroom.

The Timer includes a clockwork device, on the face of which is a graduated dial. The act of turning the indicator to as many minutes as the heater is intended to burn automatically lights the heater, and at the end of the minutes indicated the burner automatically goes out. By this means all possibility of over-heating is eliminated, and waste of gas through forgetfulness is impossible, since the heater can burn only as long as determined upon in advance. It eliminates the possibility of accidentally turning on the gas without lighting it, as the gas can only be turned on by moving the indicator on the timer, and the pilot light on the water heater does the rest.

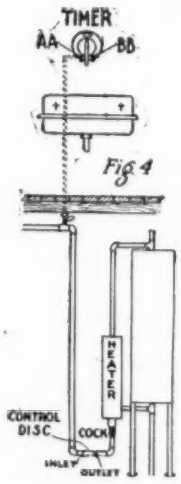


Fig 4

The pilot light burns continuously and the cost of the gas consumed by it will not exceed 3 cents a week.

This idea has been enthusiastically received by those gas companies to whom it has been submitted. Its reliability and permanency in operation have been definitely established by a year's test before placing it on the market.

The William M. Crane Company, New York, manufacturers of Vulcan gas appliances, make a line of water heaters comprising heaters with cast-iron and with cast-brass sections, double copper coil heaters, and a small coil-and-tank type for places requiring storage of 5 to 10 gallons of hot water.

Their latest double-coil heater is the No. 423, and the popularity of this apparatus is due solely to its merits. It is in universal use throughout the country and is unequaled for simplicity, efficiency and economy.

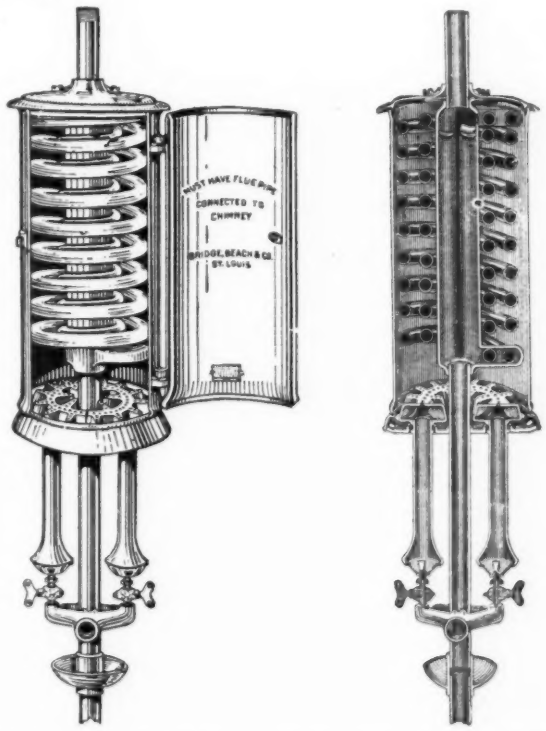
All connections are vertical, thus minimizing installation costs, assisting circulation and reducing strain on the connections.

The coil is of finest quality, $\frac{3}{4}$-inch seamless copper, warranted to give long and efficient service. The interior construction makes every part readily accessible. Lift-out burner; neatly finished cast iron jacket; lower portion insulated around burner.

Practical tests have demonstrated that when used with carefully constructed appliances, gas is the cheapest of all domestic fuels. It follows that the more efficient the appliance the less the gas consumption, and therefore the greater the saving. The "Vulcan" is the most efficient of all gas water heaters—because its construction is unquestionably the most practical.

Bridge, Beach & Co., St. Louis, make the Ideal Superior Water Heater, which they describe as the only water heater having double copper coil and brass centre circulator.

The circulator is a hollow brass casting with four concave sides that act as baffle plates and throw additional heat to the coils. It is a direct water passage and is practically a water heater in itself. Small projecting ribs in upper part of the chamber tend to increase quick circulation in the coils, which are brazed into the circulator at top and bottom.



The burner consists of two sections, each a burner in itself and having a separate valve. Each burner section fits the top of a separate air mixer and can be easily removed.

The advantage of having the burner in two sections is evident in regulating the temperature.

The cuts show the opened heater in perspective, and a sectional view of the circulator, double coil and divided burner.

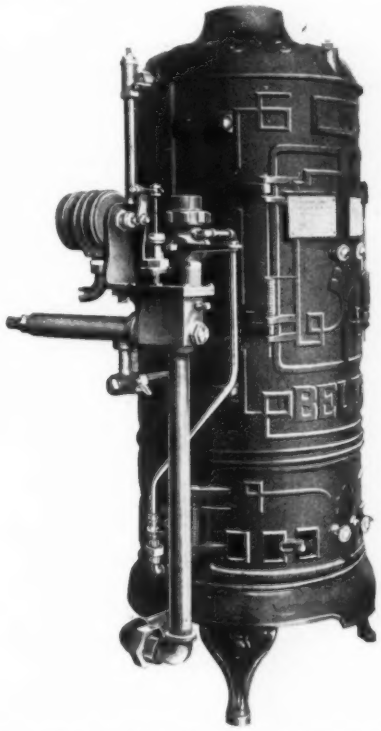
The Beler Instantaneous Water Heater is made by the Beler Water Heater Company, Pittsburgh, Pa., under some 10 patents, the last one granted in 1913 having stood the test of an infringement suit in the United States District Court.

The Beler water valve is so constructed that it cannot bind or stick. It is the simplest and most satisfactory valve ever used in a water heater, and will operate perfectly on a much lower water pressure than any other.

The Beler hydro-carbon burners are non-corrosive, will not burn out, and give a efficiency of 85% in the heater. They have adjustable air shutters in the bottom of the jacket for regulating the mixture of air and gas to secure perfect combustion.

The thermostat is simplicity itself, and is connected to both ends of the heating coil, assuring instant and complete control of the temperature.

The heater has a detachable circulating coil. Eighteen-gauge seamless copper tubing is used throughout, and tested to 1,000 pounds pressure.

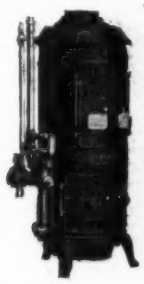


The Beler is not an experiment; experts have eliminated a mass of springs, stuffing boxes and complicated mechanism, and there are over 100 less parts than in the older types of heaters.

The keynote of the Beler is "Simplicity," which is the elimination of the non-essential. It means the survival—not only of the fittest, but of the best.

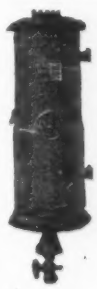
It is made is sizes giving from 2 gallons to 8 gallons of hot water per minute.

Yesterday's luxuries easily and naturally become to-day's necessities. Only a few days ago it was not possible to have hot water without trouble and in unfailing abundance. Such a convenience was not possible even to those to whom the expense would not be a serious consideration.



Then came the instataneous heater, in which the water pressure was utilized to operate the gas valve. When the water was turned on the gas flow was also opened and the gas was ignited from a constantly burning pilot.

Subsequent years have brought vast improvements. Efficiency and economy have been the objectives. Various conditions had to be met by modifications of the original. To-day it can be said there is a gas-fired water heater to meet every requirement, every condition and every fancy.



The ideal is attained in the "Pittsburg" Automatic Instantaneous Water Heater. With absolute safety, for the smallest cost per gallon, the "Pittsburg" will furnish boiling, steaming hot water in practically unlimited quantity, and is ready at any moment. The "Pittsburg" is built in different sizes, with capacity ranging from 3 gallons to 8 gallons per minute. It is mechanically and scientifically perfect. It is hardly possible to conceive of a desirable hot water condition that this hot water heater does not meet. It provides hot water with no trouble, practically as abundant and at very little more expense than cold water. You have hot water instantly, merely at the turn of the faucet., just like the cold.

For smaller requirements the "Bungalow" heater is equally satisfactory and equally perfect in its operation up to the limit of its capacity.

It will furnish hot water in quantities from $1\frac{1}{2}$ to $2\frac{1}{2}$ gallons per minute It is instantaneous and perfect.

The Lion circulating tank heater, also made by the Pittsburgh Water Heater Company, has long been recognized as one of the most efficient copper-coil heaters, and enjoys a very wide sale.

(*Continued on page 346.*)

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A. M. CALLENDER, Vice-President and Treasurer.
CHARLES H. WADELTON, Secretary and Manager.

SANFORD K. CAMPBELL, Editor.

NEW YORK, MONDAY, MAY 31, 1915.

Are We Conservative?

Every interested observer comments on the gas business as being conservative, and its most vociferous advocates take the same attitude as the deposed leader of the itinerant band: "I don't have to prove it—I admit it." If the status of the gas water heater be taken as a criterion we are conservative. It has been outnumbered 4 to 1 by the gas range, and unless something unexpected occurs this condition will remain. Something should happen for many reasons, the principle one being the opportunity for additional revenue from existing main, service and meter investment. Another reason is that when a water heater is installed there is less reason for the consumer to use the coal range during the summer months. Another is its educational value in securing leads for water heater installations in factories, offices, small shops, restaurants, etc.

Even to-day we find some companies who do not connect water heaters, which means one more step before a sale can be consummated, and while it may be good operating, its mighty poor merchandizing.

Prizes have been offered for technical papers, for designs of appliances and for new members in associations. We offer a prize to the company that sells more gas water heaters than ranges during the last 6 months of 1915!

Gas Range Week was admittedly a great success, and we have suggested to the N. C. G. A., that they father a Water Heater Week.

The possibilities in the gas water heater is our excuse for devoting nearly the whole of this issue of the JOURNAL to it.

Institute Directors' Meeting.

The May meeting of the Board of Directors American Gas Institute was held on the 13th, and in the absence of the president, was called to order at 10:30 by the first vice-president, Mr. Walton Forstall.

The following were present: R. W. Bush, L. R. Dutton, A. E. Forstall, Walton Forstall, W. H. Gartley and G. G. Ramsdell, Secretary.

The Public Relations Committee submitted its usual monthly report, as did also the Technical Committee.

The Board appointed a Committee of Arrangements for the Institute meeting, composed of 7 members, with power to increase their number; and selected the following as members of this committee: J. A. Britton (Chairman), W. B. Cline, E. C. Jones, C. O. G. Miller and G. G. Ramsdell, and authorized the president to choose two additional members, preferably from the eastern part of the country.

The Board approved the report of the Affiliation Committee as received at the March meeting, and gave directions that the necessary constitutional amendments be prepared.

The Affiliation Committee was authorized to prepare affiliation agreements for submission to the New Jersey State Gas Association and also to the Illinois Gas Association, the latter having notified the Institute of its desire to terminate its present agreement.

The Board decided to hold meetings on the usual dates in June and July and probably in September, with the usual meeting the day before the Institute meeting. The Report of the Board, with its recommendations to date, will be adopted at the July meeting and printed in the August "News." Such additions to the report as may be required later on will be made before the report is presented to the Institute meeting.

Subject to such change as the President may deem desirable, the Board fixed the date for the Directors' meeting at San Francisco as 2 P.M., Monday, September 27th, and the date for the Institute session as 2 to 6 P.M., Tuesday, September 28th. It is believed that one session will care for all of the Institute work, but to provide for this not being the case, a hall will be available for an Institute meeting Wednesday afternoon.

The Secretary was directed to acknowledge with thanks the respective invitations of the Iowa District Gas Association, and of the National Electric Light Association to attend their annual meetings, and to express the regrets of the Directors that they would not be able to attend

May Meeting, Board of Directors N. C. G. A.

The regular monthly meeting of the Board of Direrctors was held at the headquarters of the association, 61 Broodway, New York, May 21st, 1915. There were present: H. B. McLean, president; B. J. Kellum, J. B. Myers, W. W. Barnes, T. R. Elcock, Jr.; R. C. Ware, W. J. Clark, W. M. Crane, P. S. Young, H. G. Reed, Louis Stotz, Secretary.

A short discussion arose as to the proper title for the Salesmen's Handbook now being prepared, and it was decided to call it the Salesman's Handbook, and to distinguish the old handbook by calling the latter the Salesman's Catalog.

The Secretary stated that as only afternoon sessions were to be held at the Washington Convention the number of papers presented must necessarily be limited; and a morning session under direction of the Rates Committee (the date to be selected later) was approved, because the discussion on rates being so involved would require much time.

A tentative entertainment program for the convention was submitted by Mr. Reed, and approved by the Board.

Further social business was taken up in the shape of an invitation to the officers and directors of the N. C. G. A. to attend a dinner given by the New York Gas Meeters on June 10th, which was accepted.

Mr. McLean, who had just returned from San Francisco, reported that the gas men on the Pacific Coast were anxious for closer relationship with the N. C. G. A., and it was decided to invite them to form a Pacific Coast Section of the N. C. G. A. It was also decided to hold a mid-year Conference during the time of the Gas Congress, and to invite all visiting gas men to participate.

Upon motion, the Chairman of the Central Development Bureau was authorized to co-operate with the Government Bureau of the Census in gathering and compiling data regarding the gas business.

The National Gas Range Week Campaign having resulted in such gratifying increases in sales to the companies that tied up their local sales efforts with the plans, it was decided to plan a National Gas Lighting Week for the Fall. The Publicity Committee was instructed to take the necessary steps to secure the co-operation of all gas companies in this undertaking.

The advisability of the N. C. G. A. preparing a gas lighted Exhibition Booth for display at conventions and exhibitions, and for rental or loan to companies for local publicity was referred to the Publicity Committee.

The president announced the appointment of the following committee members: Nominating—P. S. Young, chairman; C. W. Hare, F. W. Frueauff, A. P. Ewing, L. B. Young. Time and Place—Arthur Hewitt, chairman; L. R. Dutton, T. R. Elcock, Jr., O. T. Knight, E. S. Dickey.

The report of the Committee of the American Society of Mechanical Engineers on Standardization of Special Threads for Fixtures and Fittings, having been approved by the Committee on Standardization of Gas Appliance Specifications, was approved by the Board.

SPECIAL ENGLISH CORRESPONDENCE.

Monthly Letter From Norton H. Humphrys, Salisbury, England.

GATHER UP THE FRAGMENTS.—PROGRESS AT BURNLEY.

As time goes on, there is a gradual but none the less marked change in the tone of the discussion respecting the destructive distillation of coal. Coincidentally with the continual advancement in the direction of finding uses for all kinds of so called waste products, the basis expands. In the beginning of any manufacturing industry, attention is directed towards one main object only. Gas engineers, for instance, concentrated their attention on the quality and quantity of gas that could be extracted from a ton of coal, and not for a long time did they begin to exploit the residuals. Coke was the only item that was considered or figured in the annual income, the tar and liquor being given away, or simply run to waste. The sites of some of the earlier gas works are known to be saturated with tar, and in one instance, at least, it was considered advisable to put down a boring to a depth of 20 feet, as a good supply of water showing 2° or 3° Twaddell could be so obtained, and could be used for the supply of the washer in place of clean water. Further, there was not wanting a certain amount of opposition to the utilization of the residuals, on the lines that "our business is to make gas", and that too much attention to subsidiary matters would be prejudicial to the interests of the main object. A century of gas making has elapsed, before gas engineers, under the stress of increasing prices for all kinds of material, higher wages for a shorter day's work, and larger fields of operations, became alive to the necessitv of utilizing everything that can be extracted from the coal to the best advantage.

The same may be said with regard to the carbonization of coal for the production of hard furnace coke. In the primitive form of the coke oven, the gases and other residuals flared away to waste. Even long after it was known that the residuals were being successfully utilized in Germany, there was a very strong impression to the effect that this was done at the expense of the quality of the coke. In the light of modern experience both as regards gas and coke works, it is evident that such slackness was responsible for the waste of an enormous quantity of valuable material. It may be urged in excuse that there was no market. The old tradition is to the effect that the manufacturing engineer cannot drum his goods without loss of dignity. But he is now recognizing the fact that where no market at present exists, one can be found, and that the objection is not insuperable.

Bearing these facts in mind, we turn with some interest to an important conference held at Cardiff a week or two since, on the Extension of British Trade. An important number is a paper by Mr. W. J. Atkinson Butterfield, on the products of Coal Distillation. He remarks that, out of a total output of some 287½ million tons of coal in the United Kingdom during the year 1913, 37½ million tons were used for the manufacture of gas and of furnace coke, over 16 millions going to the gas works, and the remainder to the coke ovens. From this quantity of coal at least, the whole of the ammonia and tar products should be available. The non-volatile products are about 70 per cent. of coke and a small quantity of free carbon, of which something less than 50 per cent. of the coke is available for sale, the remainder comprising that used on the works, the residue of breeze and small. The products from 100 tons of coal are approximately 1,200,000 cubic feet of gas, 7.8 tons of ammoniacal liquor, and 5.35 tons of tar. From the gas there may be extracted 195 gallons of benzol, 30 gallons of toluene, 72 lbs. carbon bisulphide, 120 lbs. cyanogen, and sulphuretted hydrogen equivalent to a production of 1.8 tons Sulphuric Acid Sp. Gr. 1.71 (80%). There is more than enough acid, by some 50%, to neutralize all the ammonia in the gas or liquor for the formation of sulphate of ammonia. Two-thirds of the tar is represented by pitch, and from the remainder can be extracted, amongst other things, 12½ gallons benzol, 1½ gallons of toulene, two and one-third cwts. naphthalene, 6½ cwt. crude phenols, and 21½ cwt. fuel oil. From these figures it is possible to get the total production in respect to any one substance, in the United Kingdom. The principal suggestion that the author had to offer, so far as gas works are concerned, was the extraction of benzol from the gas. Two years ago he supported Mr. H. L. Doherty, of New York, in his advocacy of the complete or partial extraction of benzol, because he believed that the extracted benzol would be of more service to the community for use as motor spirit, than the vapors, when retained in the gas, were to the users. The benzol content in town gas ranged from 1½ to 3 gallons per ton of coal, varying with the quality of the coal and the methods of carbonization, and if the whole are extracted, the calorific value would only suffer to the extent of 70 per cent. the light from incandescent burners would only be affected to a small extent, but practically no light would be available from open flat flame burners. The author goes on to show that one-third of the benzol could be extracted without prejudice to gas consumers and users of flat flame burners, and this quantity would represent 12 million gallons per annum, which would be a valuable addition to the home production of benzol. If the whole of the gas from coke ovens was debenzolized, the total production would be 60 million gallons per annum. The author also had something to say about the value of dehydrated tar.

But gas engineers, in view of past experience, and with the competition of coke ovens in view, would like to know something about the commercial aspects connected with the putting of some millions of gallons of benzol on the market. Only a small proportion of statutory gas undertakings have acquired powers to supply 500 B. T. U. gas. Many must perforce supply something like 600 B. T. U. Some go so far as to say that the poor gas is in practice as good as the richer, as requiring less air for combustion, and not wasting so much heat. Be that as it may, it is doubtful whether the average gas consumer would stand a reduction of 50 or more B. T. U. per cubic foot, without finding evidence of the same in his gas bill. The process that extracted the benzol would also remove the naphthalene, and this is important because of all the constitutents in the gas benzene and toluene are the most active naphthalene carriers. Benzol is frequently added to the gas as a cure for naphthalene troubles.

Papers on "the coal trade and allied industries" and "Coke oven by-products" also afforded some interesting information in connection with the utilization of gas works products. It was remarked that the increased production of sulphate of ammonia had not led to a slump in the market as many had expected. Comparing 1913 with 1893, the average price was 12% higher, notwithstanding the fact that production had increased six-fold. Stress was also laid on the maintenance of a good quality of sulphate, which has recently been pointed out by the Sulphate of Ammonia Association. Many foreign markets can only be approached with an article yielding 25% N.H.₃, less than ½% excess acidity and less than 3% of moisture. On this point I can say from personal experience that quality is equally appreciated for home consumption. For many years I have manufactured a sulphate that would pass the above named conditions, with the result that the greater part of the make goes to farmers in the same county, and the possibility of doing a trade in the Antipodes does not interest me greatly. The fishing or dipping process is largely responsible for a damp acid salt. If an ejector is used, or a bottom discharge hopper, so that the salt is removed without being lifted through the body of the acid in the saturator or the scum on the surface of the fluid, the result is a marked improvement. It gives a drier and purer salt, which can be sold within two or three days, instead of having to drain for a week or two before being bagged, and there is not so much discolored drainings to be disposed of. Since using the bottom discharge hopper, there has never been any trouble with blue salt. Another point is to confine dealings for sulphuric acid to thoroughly reliable and competent firms, who will guarantee to supply an article sufficiently free from arsenic or other impurities to make a clean salt.

Some interesting figures illustrating the changing conditions of our industry over the last 30 years are embodied in a report submitted to the Burnley Gas Committee by their engineer, Mr. J. P. Leather. In the year 1883 the committee decided to deal in cooking and heating apparatus, and most of the business has been done on terms of direct sale. Sales on the three years instalment plan were not a success. One good effect was the leveling up of summer and winter consumption, which was partly assisted by the introduction of the incandescent burner. The December consumption, expressed as a percentage of the year's output, had been reduced from 15 to 11%, while the June output was over 6%, compared with half that quantity. The ratio between maximum daily and annual make has been increased from 151 to 218. The number of

meters in use had doubled. From 1889 to 1898 the average per meter showed a decrease. This was partly due to the introduction of incandescent burners, and partly to a large increase in the number of small meters, brought about by the introduction of the slot meter in 1895; but this item had subsequently not only recovered, but exceeded the former figure. Ten years ago the committee decided to offer a special reduction on gas used for power, and since that time the quantity required for that purpose has gone up threefold. It was now proposed that the cost of piping, stands and other items charged as extras should be included in the price of the cooker or other appliance, and that the committee will keep all cookers and burners in repair, whether the property of the consumer or the committee, without charge for fitter's time, but materials required for renewals or replacement would be charged. By this means they would secure that each customer obtained proper and satisfactory results from the gas used. A systematic inspection of all gas apparatus was further advised. Some years ago the result of such an inspection revealed the fact that there was room for improvement, even where people were so far satisfied.

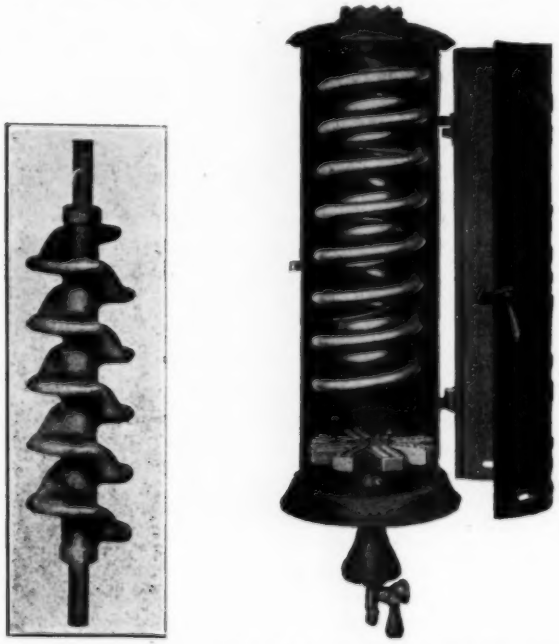
This procedure supports the remarks made in these letters about improved service rather than reduced price. The improvement in lighting, cooking and heating apparatus have all tended to a great economy, by reason of higher duty, whether for light or heat, per cubic foot of gas used, and the average gas bill is now so moderate that a reduction of one penny or two pence per 1,000 is not appreciated. But the improved service indicated by the above proposals, which can be carried out at a cost of certainly less than 2d. and probably not exceeding one penny per 1,000 cubic feet of gas sold is very much appreciated, and leads to increased business, especially in the direction of increased average per consumer, which is in many respects more lucrative than additional consumers. Every progressive undertaking is already doing a great deal in this direction. Even the most conservative find they must do something in the way of assisting the consumer. Modern apparatus is more delicate, and requires proper maintence to secure efficient results, and many consumers are not sufficiently alive to their own interests to see that this is done, or get disheartened by the tendency of the jobbing tradesmen towards making a job directly he is called in. One may safely say that before many years have elapsed the Burnley programme will be generally adopted.

(*Continued from page 343.*)

The Gas Water Heater.

The Augmore Manufacturing Company, Cleveland, O., make a line of water heaters comprising cast coil, cast sectional and copper coil types.

This one piece coil is furnished with "Augmore" Heaters No. 9 and No. 10. Large water ways with no baffles permit unobstructed circulation. Having no flat surfaces or dead arms makes it exceptionally desirable for hard water districts. The coil fits snugly in the jacket, and the hot gases wind about the coil, the live heat units being thereby absorbed. The coil is dipped in a special solution to prevent rust, and is tested at 200 pounds air pressure.



Their "Sand's" double coil heater with star tipped burner has been developed to the point where hot water is now a matter of seconds, instead of minutes as heretofore.

The large gravity hinged door is half the jacket and the drip pan and base are cast in one piece, adding to the general neat design and appearance. One coil is set within the other, and suitable baffle plates are furnished.

The burner is star shaped, with raised drilled openings, and may be removed by releasing one set screw.

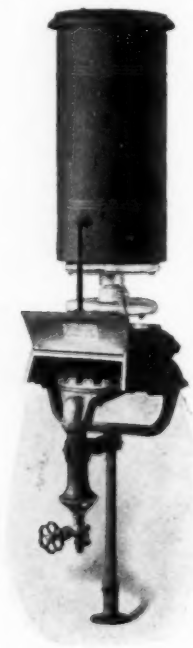
The large bottom feed mixer and needle adjustment permit perfect combustion.

Any of these heaters, or those of any make, are made automatic by the Augmore Regulator, which insures a large supply of hot water and at the same time guards the gas bill.

When water is drawn it permits only enough gas to pass to heat an equal amount. The Automatic Storage System is by far the cheapest to operate. It permits the heater to work on a slow flame—does not require as large nor as expensive a heater.

The Augmore Regulator is said to be the most sensitive on the market, operating on less than two thousandths of an inch expansion or contraction, and so stoutly and simply built it cannot get out of order.

The "Reliable" Circulating Copper-Coil Water Heater, made by the Schneider & Trenkamp Company, Cleveland, O., is efficient, its makers say, owing to the peculiar shape of its continuous tapering copper coil; and a profusion of scalding water is assured in less time and at less cost than is possible with any other copper coil heater of similar size in existence. They know this because the shape of the coil is the result of an exhaustive series of tests, which included every copper coil heater on the market worthy of consideration.



Through a gradual process of elimination and careful analysis they determined a shape of coil which successive experiments proved beyond doubt distinctive and a long desired advance in the science of copper coil water heater construction.

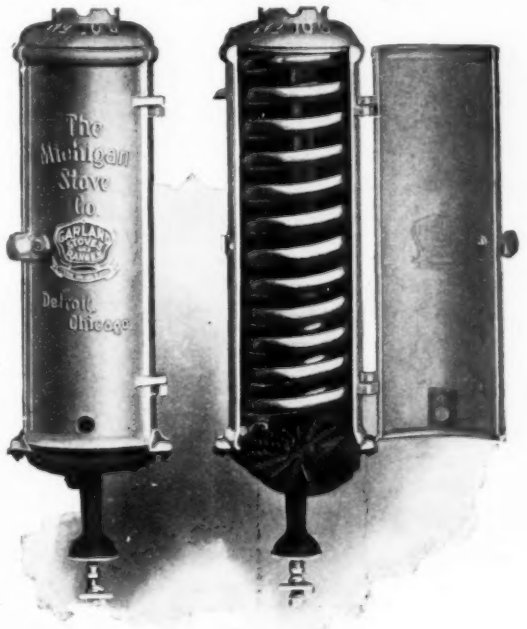
The double jacket of steel is blue porcelain enameled, inside and outside, and has an air space between, guarding against the possibility of rusting or burning out, and providing a non-conducting air chamber. Means are provided for moving the jacket or coil casing vertically above the burner to expose it for lighting and to cause any unlighted gas from the burner to pass outside of the casing and thus prevent the formation of ignitable mixture within the casing prior to lighting the burner. The burner is most powerful and is fitted with a removable or loose cone, which greatly facilitates the thorough cleansing of all parts of burner when necessary. It also has an adjustable valve which allows regulation of the burner for any pressure of gas.

About the first really efficient independent coil heater, and the one used as a standard in rating all of them, is the No. 10 Garland Water Heater, made by the Michigan Stove Company, Detroit.

From actual tests, for the amount of gas consumed, it gives a higher efficiency than any other of its size ever introduced.

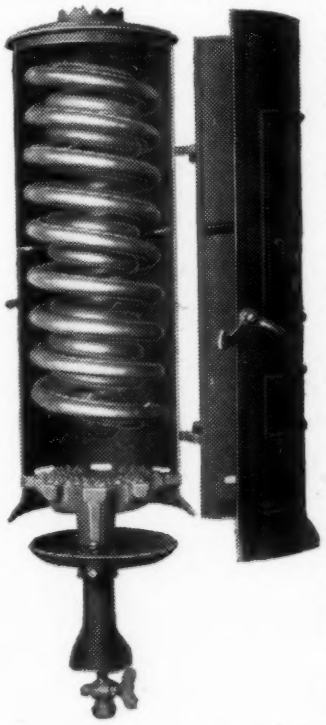
It has two separate spiral coils, both connected at top and bottom by brass couplings brazed to the coil, rendering leakage at these joints impossible. The outside coil is 17 feet 10 inches in length, and the internal 10 feet 10 inches; both of $\frac{3}{4}$-inch seamless copper tubing.

The burner is of the two-piece type, the upper half removable so that it may be easily cleaned when necessary. The lower half is cast in, and forms a part of, the condensing plate.



The casing is heavy cast iron, removable by loosening three bolts. The door, extending the length of the casing, renders easy access to the coil, and is equipped with a non-positive catch, a "Garland" safety device eliminating danger from explosion. The casing is entirely aluminized, aluminum fused into the metal, which reflects heat and prevents rust.

The General Gas Appliance Company, New York City, make circulating tank heaters with cast-iron and cast-brass sections, and with double and single copper coils, all of the quality of the general line of TripleX and SimpleX gas appliances.



The No. 8 F Triplex, illustrated, is designed for 30 or 40 gallon boilers and has 25 feet of $\frac{3}{4}$-inch copper coil of 20 gauge metal and $\frac{3}{4}$-inch pipe connections. The No. 7 A Simplex, made for boilers of 60 gallon to 100 gallon capacity has the outer coil of 1-inch tubing and the inner of $\frac{3}{4}$-inch, both 20 gauge, and the water connections are 1-inch. These, with other sizes made, cover all possible needs of service, and gives a line of gas water heaters comprising something for every price as well. The Triplex and Simplex line of water heaters combine powerful heating efficiency with economy of operation and superior workmanship. The form of coil used presents the greatest active surface for heat absorption; the metal used is the best of its kind for heat transmission. These qualifications include about every known requisite.

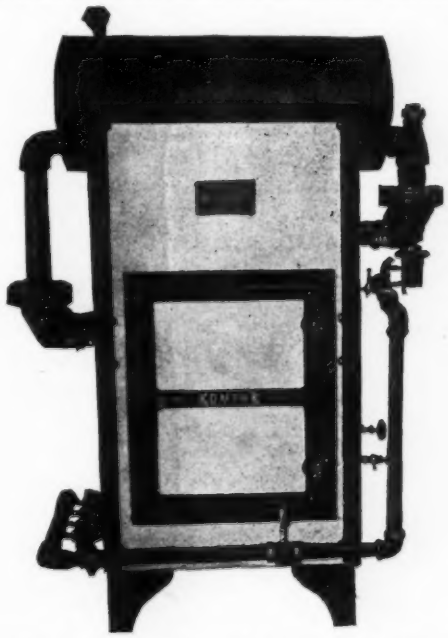
The Bastian-Morley Co., Chicago, make the Superior Combination Range Boiler and Water Heater, for which they claim very high efficiency.

In this heater cold water from the bottom of boiler flows to the cast iron spreader located immediately above the burner, and from there up inside the central flue to discharge into top of boiler. The patented burner is so constructed that secondary air is fed to the interior of each of the annular flames, and the burner is divided into two sections with independent valves; the smaller division used to maintain the heat after the body of water has been brought to

the temperature desired. The two sections can be used either separately or together.

The Long-Landreth-Schneider Company, New Brunswick, N. J., make various sizes and types of Kompak and Climax gas water heaters.

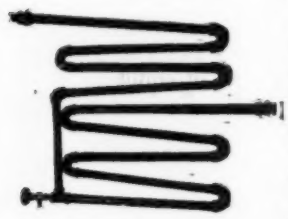
This type S Kompak Automatic Instantaneous Circulating Water



Heater is really a combination of a powerful copper coil heater, which heats the water as it runs, with a storage boiler that allows water to be drawn in excess of the instantaneous capacity, so that it is not necessary to cut the water supply. The main burners are ignited from a small soapstone pilot, and as soon as the water in storage boiler is heated to 130° to 135° the gas is automatically extinguished by the snap thermostat. The opening of any hot

water faucet causes the incoming cold water to operate the thermostat and flash on the gas. The heater is constructed with heavy cast iron jacket, thoroughly insulated with 1¼-inch asbestos. A large door occupies nearly the entire front, giving access to every part of coil and burner and perfect safety in lighting. A special feature is the removable end panel, through which any coil can be separately removed without disturbing the jacket.

The coil construction is of patented design, in which the cold water enters at top of heater, with the hot water outlet at center of heater in the very hottest part of fire. It is this reversed circulation, with horizontal baffles giving long fire travel, that gives the very high efficiency. The entire section is constructed of heavy, seamless drawn, copper tubes, connection made at each end with a union nut outside of heater, and each coil is provided with a compression drain cock at lowest point.



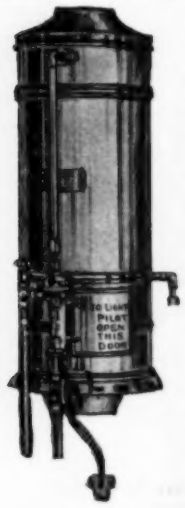
The storage boiler is built into the body of the heater, and its entire lower half is subjected to the heat from the burners, thus utilizing additional heat.

The type S is made in 4 sizes for domestic use; and for vapor, steam and hot water heating systems.

The No. 4 Kompak Pressure Type Automatic Instantaneous Heater is made in but one size, suitable for the average size home, or where there are not more than two hot water faucets likely to be used at one time.

There is no possible way to heat water as economically as in a Kompak automatic heater. Eighty per cent. of the heat in the gas goes directly into the water; the highest efficiency of any gas burning device. Moreover there is no waste. A gallon of water, a foot of gas. If no water is used no gas is consumed. 1,000 gallons of hot water any time you need it, at the mere turn of a faucet, at a cost of 1,000 feet of gas.

The No. 2 Climax automatic is adaptable for individuals apartments, school lavatories, bath rooms, shops, etc. It is an automatic instantaneous heater, handsomely finished in nickle-plated copper, designed to be attached to wall by means of shelf and bracket. Its perfect construction, light weight and simplicity of operation, makes it especially suitable for hundreds of special installations, where no other type of water heater can give corresponding service. It is intended primarily to connect with one or more faucets, where the run of pipe is short, and where only one faucet is used at a time. The flow of 2 gallons a minute is ample for one faucet, but where water pressure is low a smaller stream is heated correspondingly hotter.



This company's independent tank heaters have a special design of coil, constructed of 2 lengths of heavy gauge, seamless copper, coiled on a large mandrel to avoid stretching, nested and brazed into brass casting at inlet and outlet. Besides this coil is a central vertical brass pipe, with a large section in the center and top to baffle the heat. The burner is so made that the flame is cone shape, and impinges on the brass water leg before being deflected to the sides. The result is wonderful, as circulation is instantaneous and jacket is always cool.

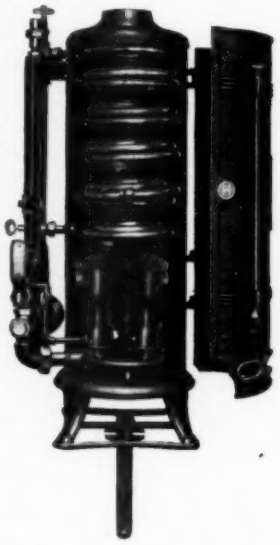
Hoffman Water Heaters, made by the Hoffman Heater Company, Lorain, O., are the "official" gas water heaters at the Panama-Pacific International Exposition, furnishing the hot water in all the fair buildings. The heaters made by them comprise the Instantaneous Automatic, Cottage Automatic, Multi-coil Storage Automatic, Double and Single Coil Tank Heaters, Cast-iron Coil Heater and Multi-coil House Heater.

The Standard automatic is made in 3 sizes, No. 3 D, 4 D and 6 F, which have a double cast iron shell with ⅞-inch dead air space between the jackets.

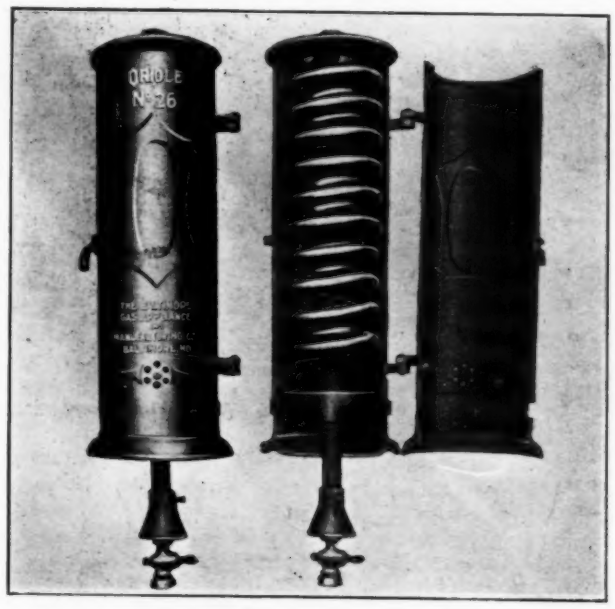
The double doors above and below are self-closing, and the larger sizes have doors in the rear to give access to the rear of the coils. The top casting contains a deflecting plate which prevents down draft from blowing out the pilot.

The coils are of highest grade 18 gage copper tubing, wound in a manner to produce the greatest efficiency. The lower section, which lies in the fire zone, is detachable and removable. The No. 3-D contains 75 feet of ¾-inch tubing; the No. 4-D, 100 feet of ¾-inch; the No. 6-F, 125 feet of ⅞-inch. The thermostat is different in construction to any on the market, much simpler, and more positive because it acts on the water valve, not on the gas valve, reversing the action of the water valve by opening a port that throws the water pressure on the opposite side of the plunger, and drives it back to place, releasing the pressure from the gas valve, which is forced shut by this reversed action.

The No. 1½ D is the latest addition to the Hoffman line, a 1½ gallon Automatic Heater with Thermostat. There is a big demand for a heater of small capacity for flats, bungalows and cottages, especially in the Southern States and Pacific Coast territory, and this heater with all the latest equipment and improvement will fill this want. It has the same thermostat and valve equipment as the larger size heaters, is built for service and carries the same guarantee as the highet priced heater on the market. It is of very neat design and is usually placed in the kitchen on brackets. With all circulating tank water heaters this company recommends the use of a thermostatic valve installed in the range boiler. They make a special thermostat for this purpose that be set for any temperature above 130°, and that will keep the water at that figure.



The Baltimore Gas Appliance and Manufacturing Co., Baltimore, Md., makers of the "Oriole" gas stoves and appliances, list two water heaters, No. 12 and No. 26 Oriole Copper Coil Water Heaters.



The larger one has 25 feet of ¾-inch seamless copper tubing in a double coil, and a powerful star-shaped cored burner. The jacket is cast iron of artistic design, easily removable; the door extends the entire length and gives easy access to coil and burner parts. The heater is of unusual efficiency and durability, and is readily sold where known.

Centrifugal Dehydration of Water Gas Tar at Amsterdam.

[From an account in the "London Journal."]

At the Amsterdam Western Gas Works there are four sets on the Humphreys and Glasgow system, each of 525,000 cubic feet daily capacity. For carburetting, a common American gas oil is used. The temperatures in the carburetters and superheaters were regulated at first according to the color of the bricks seen through the sight-holes; but afterwards pyrometers, with recording galvanometers were permanently fixed in the superheaters. These instruments effected a considerable improvement in the composition of the tar, and the operatives highly appreciated them, for by their use the working of the plant and the maintenance of the right temperature were made a great deal easier. Owing to the regular temperature, the tar has become somewhat denser, floating tar has totally disappeared, and the quantity of emulsion has decreased considerably. A fact of great importance was that the oil necessary for keeping up a fixed calorific power in the gas could be decreased; so that the first cost of the recording instruments was to a large extent repaid by greater economy.

From the outset there was the question of the extraction of the water from the tar. For dehydrating the coal-gas tar there was on the works four centrifugal machines of Burmeister and Wain's make, in regular work, and which had always yielded the most satisfactory results, as the rather thick coal tar was dehydrated in one operation from 25 to 30 down to 2 to 3% water content. The plant is capable of dealing with 20 metric tons of coal tar a day.

As this plant worked for about 9 or 10 years with the best results, the same method was tried with the water gas tar. According to theory, the difficulties would be many times greater, owing to the very small difference in specific gravity between water and water gas tar. With coal tar and water the specific gravities are 1.25 and 1, while with water gas tar and water they are 1.05 and 1; and as the centrifugel separation is mostly due to the difference in specific gravity, the difficulty of the process can be understood. It therefore goes without saying that the first experiments were unsuccessful. Upon one occasion, however, a sample was obtained with water content of less than 1%. As this showed possibility it became important to throw some light on the circumstances governing the separation of the tar and water. For this purpose numbers of investigations have been made with gratifying results. When immediately afterwards the theoretical speculations were applied in practice the results proved them sound.

The entire question of the successful dehydration of water gas tar turns upon the point that this tar and water have not only different specific gravities, but that at different temperatures the curves representing them do not run parallel, but diverge considerably. The fact is, therefore, that the higher the temperature of the tar the wider is the difference between the specific gravities of the two liquids. The troubles of those who have tried to dehydrate water gas tar in centrifugal machines are possibly due to their operating at temperaturs about 50° C., generally employed in dealing with coal tar, and also have not taken account of the lower specific gravity of the water gas tar.

The centrifugal apparatus has a drum revolving at high speed on a vertical shaft, with, at the upper parts of the interior, a flat ring, 4 inches wide, fitted in such a way that a small space is left between the inner surface of the drum and the outer circumference of the ring. When by the high speed revolution the tar and water are separated, the tar travels upwards along the inner surface of the drum, through the free space, to the upper side of the ring, where it makes its exit through the tar offtake. The water, being lighter than the tar, forms a layer at the side of the tar, and, traveling upwards, its passage is barred by the flat ring, so that it is forced to creep along the under side of the ring, where there is an outlet for it.

Practice has demonstrated that the column of tar above the ring is in a kind of equilibrium, and in this equilibrium the specific gravity, of course, is of importance, causing the formation of a thinner and higher, or of a thicker and lower column. In connection with this circumstance, the tar offtake should be placed nearer to or farther from the inner surface of the drum—this being a question of tenths of inches. The whole matter is one of trial; but for a workman who understands his job in the treatment of coal tar, the necessary experience is acquired in a day. Care should be taken that the inflow of the watery tar is not too fast, for a plant adequate to treating 20 tons of coal tar per shift is only capable of dealing with about one-third of this quantity of water gas tar; and the whole operation is a question of suitable temperature. The pre-heating of the tar is done in a rectangular tank with a cover of sheet iron, in which a couple of doors have been made. On the cover there is a tube going upwards through the roof of the building, necessary because the crude tar sometimes retains gas in solution which escape when the tar is heated On an average, the temperature for perfect dehydration of tar lies between 60° and 70° C. The heated tar has very often a water content of about 60%; but one operation in the centrifugal machine delivers almost water free tar—*i. e.*, tar with less than 1% of water.

When the crude water-gas tar contains more than 60% of water, its appearance is sometimes not different from ordinary tar, only that it is very often more viscous, due to a sort of emulsion, eventually mixed with what may be called sludge. Real water-gas tar emulsion contains about 80% of water, and samples have even been tested showing 90% without any difference in appearance. These emulsions are treated in the same apparatus and in a similar manner; only it is necessary to raise the working temperature to 95° or 100° C. There is no danger in this, as no fractions evaporate at this point. The whole dehydrating operation gives no trouble either to the workmen or to the works chemist—in fact, it is more easy than it appears to be from the somewhat detailed description.

Tar treated in the centrifugal plant has a very low content of free carbon; the quantity varying between zero and 4%. This causes a very low figure for ash, below 0.5%. The specific gravity of the finished product is about 1.05, and its calorific power, on an average, 17,200 B. T. U. per pound. The commercial value of the water-gas tar is considerably raised by the centrifugal treatment. The water is eliminated, as are also all floating particles, soot, dust and free carbon; and a product entirely uniform in character is obtained. No extensive storage for crude tar is required, as is the case when this product has to be separated by gravity alone. The tar produced in the morning may be treated in the afternoon and delivered for sale next day. As the emulsion totally disappears, and is entirely broken up into water and marketable tar, there are no waste products. The residue left in the centrifugal drums is mixed with the coal and carbonized, resulting in very clean ascention-pipes.

The working costs of the treatment are particularly low, and centrifugally treated water-gas tar is highly appreciated by the consumers. Owing to its constant character, it is being substituted for mineral oil as fuel. Numbers of internal combustion engines have been running a long time on this tar, and giving satisfaction. The working costs are a great deal lower than with crude oil or gas oil, and the effects on the engines are the same. This tar is much used for fuel purposes. The metal industry employs it for melting crucible steel, iron, nickel, copper, brass, etc. In gas works, all the melting of metals for the foundry is done with water-gas tar; and the consumption per pound of molten metal is very low. It is frequently used for heating baker's ovens, especially those in which gas oil has been the heating agent.

As may be gathered, the centrifugal treatment of water-gas tar for its dehydration is a paying operation, giving a product of uniform quality, almost free from water, and containing practically no free carbon—in short, a product commanding a favorable market, with better prices than obtainable for un-treated tar.

New Koppers Ovens for Youngstown.

The decision of the Republic Iron & Steel Company to build 75 additional by-product coke ovens of the Koppers type at Youngstown will bring the number of such ovens at this plant up to 143. The present plant of 68 ovens has been in service for about a year, and in that time the output of the company's blast furnaces has increased, while there has been a decrease in the amount of coke used per ton of iron. The ovens are operated on a mixture of 85% high volatile and 15% low volatile coal, the present practice in this country being to use mixtures varying from 21% to about 30% high volatile, depending on the cost or availability of the coal. The 143 Koppers ovens at Youngstown will have a capacity of 1,675 net tons of furnace coke per day. The present battery of ovens is operated on slightly over 16 hours coking time, and it is planned to operate the new and the old battery on 18 hours coking time, because of the increased by-product yields from the longer period. The surplus gas per day from the ovens will be 15,000,000 cu. ft. of 570 B. T. U.; the tar product per day will be 21,500 gal.; ammonium sulphate, 56,000 lbs., and benzol output, 6,000 gallons, The value of these by-products at normal prices is in excess of $2 per ton of coke. In addition there are to be about 100 tons per day of small coke suitable for domestic fuel, and 100 tons of breeze for use under boilers.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

AT the Ladie's night with the Portland Gas "Meeters," now numbering 108 employees of the Portland (Me.) Gas Light Co., nearly 200 were present. A well arranged musical program included vocal, piano and violin selections by members of the club. During the evening Col. Fred. N. Dow, President of the company, gave a very interesting talk on his recent travels through the South. At the close of the entertainment Mr. Smart announced that a piano had been donated to the club by Colonel Dow. This very acceptable and generous gift was very much appreciated. After refreshments of ice cream, cake and punch were served, the remainder of the evening was enjoyed in games and dancing.

THE bill placing railroad firemen and employees of gas companies in California on the list of those exempt from jury service, was passed by the State Senate. When the bill came up in the House several days ago it was defeated. Upon reconsideration the House sent the measure to the Governor, the vote being 41 to 21.

ALONG with other contemplated improvements the Springfield (Mass.) Gas Light Company will in a few days start work in laying out 1¼ miles of gas mains into Fairview. This extension of service has been needed for a long time on account of the large number of new buildings being erected in that section, and according to Geo. Murphy, Manager of the company, the work will be begun as soon as possible. The pipe has been ordered and is expected in a few days. At the present time the Chicopee branch of the Springfield Gas Light Company is very busy on minor improvements in the city service.

THE Spokane (Wash.) Gas Company has a contract to heat by gas all the hot water needed in the New Union Railroad Station.

A STREET lighting expert has been in Gardner, Mass., inspecting the boulevard gas lighting of that city by the Gardner Gas Fuel and Light Company. His work is in conjunction with the tree wardens of various communities that are contemplating the installation of gas street lamps.

MR. SAMUEL ASSUR was again elected by the Directors of the Cincinnati Gas and Electric Company to represent them as a Director of the Union Gas and Electric Company, the holding corporation. The following officers were elected: Charles D. Jones, President; Rufus B. Smith, First Vice-President; Samuel Assur, Second Vice-President, and Edward H. Ernst, Secretary and Treasurer.

EXTENSION of gas mains to Platt City, Ensley and other places in that neighborhood, including Fairfield, by the Birmingham (Ala.) Railway, Light and Power Company, is behind the purchase of 3,000 tons of gas pipe, 16-inch pipe, the business being placed with the United States Gas Iron Pipe and Foundry Company. The pipe order has been placed, so that delivery will be made just at the time needed, and it is understood that the work will be started at once. Something like eight miles of new mains will be laid, it is understood, as a new "foot" to the present mains to Ensley and Fairfield.

JAMES B. DOUGLAS, of the United Gas Improvement Company of Philadelphia, recently gave a lecture on "Safety First" to an audience composed chiefly of employees of the Wilmington (Del.) Gas Company. The lecture was illustrated with both instructive and comedy slides, taken in all parts of the United States by Mr. Douglas.

MERGING of trolley companies, electric light concerns and gas companies of Chambersburg, Waynesboro, Shippensburg and Green Castle, Pa., may be brought about soon, according to announcement that a New York firm of engineers had obtained options on the following plants and railway lines: Shippensburg Gas and Electric Company, Chambersburg Gas Company, Chambersburg and Shippensburg Street Railway, Chambersburg and Gettysburg Street Railway, Chambersburg, Waynesboro and Green Castle Railway Company, Green Castle Electric Company, Waynesboro Electric Company, Waynesboro Gas Company, Mercerburg Turnpike Company.

THE clerical department of Northern Indiana Gas and Electric Company in South Bend has removed to new quarters on North Michigan street. The building, just completed, is a three-story structure. The entire first floor will be devoted to a display of ranges and fixtures, while the third floor will be used for storage. C. M. Chubb is the new manager of the local plant, recently succeeding B. S. Walters who is now in charge of the plant at Hammond, Ind.

THE employees of the Malden and Melrose (Mass.) Gas Light Company enjoyed a banquet and dance last week, and the program included a talk on water heaters, a campaign for the sale of which has just been started. Covers were set for 100 and general manager Paige presided. In the "lucky" contest, a Stack heater was won by Cornelius Buckley. After the banquet, there were addresses by the heads of the different departments, R. W. Carter of the works; Cyrus Barnes, new business; C. F. Alexander, office; W. B. Gibby, distribution.

C. R. HODGSON, superintendent of the Northern Utilities Company, Inc., is quoted as saying that Carthage, N. Y., would have a well equipped gas plant in operation by fall. The price upon which the canvass in the twin villages is being made is $1.50 per 1,000 cubic feet, net, the company to reduce this rate from time to time, as conditions warrant.

EAST POINT, GA., is to have gas lights soon if the plans of the municipality are carried out, and College Park is also to have that illuminant. The city councils and boards of trade of the two suburbs have instructed the city attorney of East Point to draw up papers necessary to securing gas from the Atlanta Gas Light Company. College Park has for some time desired a gas system, but as the mains from Atlanta would necessarily pass through East Point, the co-operation of that suburb was need. A charter amendment will be presented to the next legislature enabling the two municipalities to grant the necessary franchises.

A CONFERENCE between the Kalamazoo (Mich.) Gas Company officials and the City Council has been called to consider the proposal of the city to purchase the entire property or the distribution system by itself. Mr. F. W. Blowers, General Manager of the company, says: "There is little doubt but that the company will be willing to sell any of its property at a reasonable price. The estimates as supplied by Wm. Newbigging, however, do not at all cor-respond with the value placed on the plant by our engineers."

ALTHOUGH the certiorari proceeding of the Buffalo (N. Y.) Gas Company through its receivers is making some progress before Referee Albert Height, neither side sees the end of the case before several weeks at the least. In this proceeding the gas company is having reviewed the special franchise tax assessments made against it for the years 1912, 1913 and 1914. The referee and counsel recently viewed the various plants of the company at Forest and Niagara streets, on Dart street, at East Ferry street and Belt line, the site of the old Mutual plant, at Elk and Katharine streets and the main plant on West Genesee street. The trip and inspection was in preparation for the introduction of evidence on the value of the company's real property in the city.

THE Freehold (N. J.) Light Company at its annual meeting elected the following officers to serve during the ensuing year: President. Holmes V. M. Dennis; Vice-President, David Vanderveer Perrine, and Charles H. Butcher, Secretary and Treasurer. A contract was ordered to be made with J. H. Gautier & Co. for the erection of a new bench, which when completed, together with the extensions being made, will increase the capacity of the works 100%.

AT the annual meeting of the Mechanicsburg (Pa.) Gas and Water Company the following directors were elected: H. L. King, A. B. Rupp and R. G. Cox. The board was organized by the election of these officers: President, H. L. King; Secretary and Treasurer, A. B. Rupp.

THE Sheboygan (Wis.) Gas Light Company has been purchased by the Wisconsin Securities Company, of which Clement C. Smith is president. Mr. Smith will be president of the new company. Under the terms of tbe sale, the stock issue of the gas light company, amounting to $150,000, is taken over by the securities company, which also assumes a bond issue of $250,000. The officers of the company are: Clement C. Smith, president; Henry L. Rice, vice-president; Howard Green, treasurer; George Allison, secretary. The officers and Ludington Patton are the directors. R. A.

Young, Sheboygan, will continue as manager. The securities company owns utilities in Fond du Lac, Green Bay, La. Crosse, Winona, Minn., and Evanston, Ill.

CHICAGO city councils has appropriated $50,000 for the prosecution of the litigation over the price of gas that has been pending in the courts for the last 4 years. The special committee, appointed by Mayor Thompson on inauguration night, to push the gas rate suits, asked for the appropriation. It is proposed to use the money for the employment of special counsel and experts.

A BOSTON paper says: "Reports of the discovery in France of a new process for the manufacture of illuminating gas, which makes it possible to recover approximately 100,000 cubic feet from a single ton of coal, have reached this country. If it is found possible to employ this method on a commercial scale, it is considered that the importance of the discovery can hardly be overestimated. Gas engineers at the present time obtain between 10,000 and 14,000 cubic feet from a ton of fuel."

CATASAUQUA, PA., has been promised dollar gas by the Allentown-Bethlehem Gas Company, a subsidiary of the United Gas Improvement Company.

IT is reported that the Public Service Corporation of New Jersey is endeavoring to acquire the plant of the Dover, Rockaway and Port Oram Gas Company, which admits it is experiencing financial difficulties. In event the corporation buys it the plant will be dismantled and gas supplied by a continuation of the mains from Morristown, thus affording a new field at Mount Tabor, Denville, Rockaway, Dover and Wharton. Holders of the second mortgage bonds are also in a position to acquire other bonds of the company at a very low figure and are seriously considering taking the company over and operating the plant.

THE Rochester (N. Y.) Railway and Light Company has instituted a change in the handling of its accounts that is expected to be welcomed by the public. The city has been divided into 22 districts, and each district will have a different day of the month for the final payments of accounts to obtain the net rate. Bills will be made out and delivered continuously throughout the month in regular order, and each final day will affect only about 3,000 customers, a number, even if all call at the offices, that can cause no serious inconvenience. Bills will be delivered or mailed about five days after the meters are read and will be payable, to obtain the net rate, within 10 days. The final discount day of payment will be marked on the bills, and the district number will appear in red ink on both the bill and the stub. The reading of meters and delivery of bills under this system has already been started.

MR. E. B. MOONEY, New Business Manager of the Brockton (Mass.) Gas Light Company, was elected President of the Gas Men's Association of New England, at the meeting at Hotel Brenton, Nahant. There were between 300 and 400 members present, including gas managers, superintendents, and gas men from all over New England. A banquet and entertainment followed the election. Meetings are held four times a year.

THE New York Section "Gas Meeters" will give a reception and dinner to the officers and directors of the National Commercial Gas Association on the evening of June 10th, at the Hotel McAlpin. This dinner will take the place of the regular May and June dinners and will be the last of the season.

STEVENS Institute of Technology, will celebrate the raising of its $1,385,000 endowment fund on Alumni Day, Tuesday, June 5. There will be the usual parade of alumni at 2:15 in the afternoon, followed by a base-ball game between Stevens and Rutgers, and a lawn fete and band concert. The 43d Annual Commencement Exercises will be on June 8th, at 10 o'clock, in the Auditorium at Castle Point, Hoboken, N. J.

W. J. MCCORKINDALE, Manager of the Wilmington (Del.) Gas Company is trying to convice the local building commissioners that the new city buildings should be piped for gas. The prejudice of one of the commissioners is the main obstacle, and apparently he is not easy to move. The money involved is about $1,500, and the gas company offered to pay it if that were the only objection.

UTILITIES COMMISSION NEWS.

PENNSYLVANIA APPOINTMENTS.—Governor Brumbaugh sent to the Pennsylvania State Senate on May 19 his nominations for members of the commission. He retained only two of the old members, Messrs. Samuel W. Pennypacker and M. J. Brecht. The new members of the commission are Messrs. John S. Rilling, Erie, nine-year term; William A. Magee, Pittsburgh, eight years; John Monoghan, Philadelphia, six years; Edgar R. Kiess, Williamsport, five years, and William D. B. Rainey, Montrose, four years. Chairman Pennypacker is named for the ten-year term and Mr. Brecht for seven years.

PAWLING, N. Y., FRANCHISE APPROVED.—The up-State New York Public Service Commission has approved the exercise of franchises granted to Ralph Griffing by the town and village of Pawling, Dutchess County, for the construction and operation of an electric plant for the generation and distribution of light, heat and power in that town and village. The franchises also contain authority for the construction of a gas plant and distributing system, but this function is not at this time approved by the Commission.

HOW TO FIGURE PAVING DISTURBANCE.—One of the sessions of the Galesburg, Ills., Gas Arbitration Board was largely consumed by a discussion of whether the original investment or the cost of reproduction should be taken as a basis in arriving at the item known as paving disturbance as a part of the investment of the company.

Upon this proposition Attorney C. L. Ogden, supported by William J. Pringle, who represents the city on the board, urged that in determining upon the valuation of "paving disturbance" the amount which the company has actually expended in this work should be considered. Mr. Fischer, representing the gas company, was of the opinion that under the rules of law and the decisions of commissions and courts this amount would necessarily have to be arrived at from the cost of reproduction. Mr. Fischer's views in this were concurred in by the chairman of the board, W. J. Hagenah.

In passing upon the question, Arbiter Hagenah explained that when gas companies entered small towns they did so upon the belief that the towns would grow and that in the future they would have a good franchise and make good profits. Plants in small towns, he said, were not a financial success. Then came the spirit of regulation. Courts and commissions had declared that in arriving at "paving disturbances" the cost of reproduction should be considered, for if the company was forced to pay earnings on its investment a new company coming into the town could secure a larger return than the old company, for the reason that the money invested by the new company would be more.

FLINT, MICH., ARBITORS DEADLOCKED.—Arbitrators representing the city of Flint and the Michigan Light Company in the matter of fixing gas rates for the next 5 years, pursuant to provisions in the city charter, adjourned after being deadlocked for several hours over the selection of the fifth member of the arbitration board. The gas company representatives did not seem to have any deffinite knowledge of what position the gas company would take in the matter of a rate reduction.

CHARGES AGAINST NEW YORK COMMISSIONERS DISMISSED.—After long consideration, Governor Whitman has dismissed the charges against Public Service Commissioners Edward E. McCall, J. Sergeant Cram, George V. S. Williams and Robert Colgate Wood, growing out of a recent legislative investigation. All are democrats and members of the First District Commission.

In a statement giving his reasons for exonerating the commissioners, Governor Whitman asserts that the charges of misconduct in office and neglect of duty made against all four, had not been sustained by the evidence. While the testimony taken before the Legislative Committee bears out to some extent, but not sufficiently to furnish ground for removal, the charge that in some of its details the work of the commissioners has not been as efficient as it should have been, the Governor finds that the arduous duties devolving upon the commissioners in connection with new transit projects might be regarded as an excuse for leaving such matters to subordinates, with less satisfactory results. The Governor finds that all four commissioners were equally blameworthy in this respect.

Financial Notes.

THE EASTERN SHORE GAS AND ELECTRIC COMPANY, incorporated under the laws of Delaware, has applied to the Public Service Commission of Maryland for permission to purchase the Cambridge Gas, Electric Light and Power Company and the Salisburg Light, Heat and Power Company. Each of the companies is capitalized at $100,000.

THE CONSOLIDATED GAS COMPANY of New York has called for payment at par on November 1 all of its $1,236,000 outstanding 5% debentures, due May 1, 1918.

THE unpopularity of a 3-year debenture in times as sensitive as the present has sent—or permitted to be pushed—the price of PROVIDENCE GAS rights as low as $6.10, which is $6 plus brokerage. The range of prices last week was $6.10 to $6.50, although a few scattered lots went at $6, but this is hardly a fair quotation as a price net to buyer. So low are these rights that some large and important investment interests will not sell any of their rights but will subscribe for the debentures to the limit of their holdings. On the other hand, some large lots of rights, up to 1,000 in a single trade, have changed hands at from $6.25 to $6.50 per right. The week closed with the official bid at $6.10 and the asked price at $6.25. The stock itself (shares) sold at $92.50 recently, rights included, and was offered at the week's close at $87, without the rights. At $87 the shares net, immediately, 4 6-10% on the investment. It is confidently stated that gas securities will be worth considerably more after the new extensions of the plant have begun to earn money.

PACIFIC GAS AND ELECTRIC COMPANY has issued a statement giving the geographical distribution of its stocks, including the new first preferred stock. The company has outstanding $52,004,500 par value of stocks, of which $24,030,400 is held by 4,535 holders in California, $674,300 by 48 persons in Pacific states outside California, $4,837,800 by 597 persons in the middle states, $18,319,500 by 1,058 persons in the eastern coast states and $4,142,500 by 421 foreign holders. As the company has 6,659 stockholders with 520,045 shares, there is an average holding of a little over 78 shares. The California Railroad Commission has authorized the company to issue $1,960,000 common stock, now in the treasury of the company, to holders of its common stock as a dividend equivalent to 6% of their present holdings. The board of directors will meet within a few days and issue this stock to holders of the common shares as two dividends of 3% each, one payable now and the other at a later time in the current year.

THE board of directors of the MUNICIPAL GAS COMPANY of Albany, N. Y., has notified its stockholders of a new issue of stock amounting to $2,750,000 in 27,500 shares of the par value of $100, and $1,250,000 principal amount of its one and one-half year 5% convertible notes. These issues were authorized by the Public Service Commission, Second District, July 3, 1913, and the privilege of subscription expires June 15, 1915, at 3 A.M. The purpose of the issue of stock is, first, for the reimbursing of the treasury of the company for expenditures made from income for the acquisition of property and for the construction, extension and improvement of the company's plant and property and distributing system. Second, to provide funds for the payment of the outstanding $500,000 principal amount of 6% bonds of the company, now held by the National Commercial Bank. Third, to pay the cost of complying with the ordinance of the city of Albany passed April 16, 1906, requiring among other things the placing of electric light wires under ground.

ASSOCIATED GAS & ELECTRIC COMPANY, New York, N. Y., during the year ended Dec. 31, 1914, disposed of its securities of the Canisteo Gas Company and the Hornell Gas Light Company, and acquired a further interest in the Kentucky Public Service Company and the Norwich Gas and Electric Company, besides acquiring the remaining outstanding bonds of the Ithaca Electric Light & Power Company. The company retired $19,000 bonds of underlying companies and cancelled $213,000 of its own first mortgage bonds and collateral trust 5% gold bonds. The statement for the year follows:

Gross earnings from operation		$631,548
Operating expenses and taxes		398,760
Net earnings from operation		$232,788
Other income:		
Interest and dividends		27,354
Gross income for year		$260,142
Less deductions subsidiary companies:		
Interest on bonds not held by Associated Gas & Electric Company	$49,531	
Interest on floating debt not held by Associated Gas & Electric Company	1,058	
Sinking fund	13,825	
Amortization of debt, discount and expense and fixed capital	3,997	
Dividend on stock not owned by Associated Gas & Electric Company	1,141	
Proportion surplus reserved for minority stockholders	839	70,391
Balance available for Associated Gas & Electric Company		$189,751
Less interest		105.766
Balance available for dividends		$83,985
Dividend on preferred stock		54,419
Surplus		$29,566
Profit on sale of securities of Canisteo Gas Company and Hornell Gas Light Company		11.129
Total		$40,695
Amortization of debt, discount and expense		10.310
Surplus for year		$30,385

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